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ABSTRACT

An evaluation design created to provide information for a multiple-project program of educational experimentation is presented. Project SEED (State Experimentation in Educational Development) became an official education effort in North Carolina on July 1, 1971. Model for the program was that of the State's ESEA Title III program with certain exceptions. The 19 projects selected were funded to conduct innovative programs in 13 different priority areas. They were designed to be carried out in elementary, junior and senior high schools, an entire LEA and in two regional centers which provided services for 10 or more LEAs. A review of the SEED program revealed a need for two separate evaluations and for information to identify possible weaknesses. It is concluded that the evaluation design implemented clearly demonstrates the feasibility of utilizing a model of formative and summative evaluation in multiple-project programs. (CK)

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A FORMATIVE-SUMMATIVE EVALUATION DESIGN FOR A STATE-SPONSORED PROGRAM OF EDUCATIONAL EXPERIMENTATION

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Introduction

When an agency or group is given the task of evaluating a multiple project program, it is faced with unique and often complex strategies for the evaluation design, data collection and synthesis of results. The process becomes more complicated when the projects are dissimilar and the collection of across project data is unsuited to the needs of the audiences served. Add to this a desire for both formative and summative information collected primarily by local project personnel with negligible evaluation experience and we come to the situation which faced the Division of Research in the North Carolina Department of Public Instruction in October, 1971.

It is the purpose of this paper to present an evaluation design which was created to provide information for a multiple project program of educational experimentation -- a design which encompassed: (1) the evaluation needs of the State Agency and 19 uniquely individual projects; (2) a model for the collection of both formative and summative evaluation information; and (3) the involvement of local project personnel in the evaluation process. In addition, the paper contains information concerning the implementation and implications of the design.

THE PROGRAM

Project SEED (State Experimentation in Educational Development) became an official education effort in North Carolina on July 1, 1971. Monies were appropriated by the State exclusively to promote experimentation, innovation and education growth and development in the LEAs. Six hundred thousand dollars

was appropriated for implementation of experimental projects during the 1971-73 biennium. Although this amount was less than requested, it did allow for initial program development in 19 of the State's 152 administrative units.

The model adopted for the implementation of the new program was basically that of the State's ESEA Title III program with certain exceptions due to the low level of funding and the commitment of the State or provide the widest distribution of experimental experiences to the 152 LEAs. As a result, priority was given to those plans which:

- would be carried out in a school which did not have on-going Middle School Occupational Programs, ESEA Title III projects or State approved kindergartens;
- focused upon one of the eleven State priority areas for experimentation utilized in the selection of ESEA Title III projects. (Consideration was to be given, however, to any other area which would set a new direction for North Carolina education.) The areas were:

Community Schools	Performance Accountability
Differentiated Staffing	Reading
Drug Use/Abuse Education	School-Community Relations
Economic Education	Value Development
Management and Leadership Development	Year-Round School

- initiated new and innovative programs, rather than perpetuated old ESEA Title III, CSIP or other developmental programs; and
- allocated the bulk of the money for the program, and not for its administration.

The nineteen projects selected varied greatly in the area chosen for experimentation, the strategies employed to experiment in any of the given areas, and in the level chosen for both implementation and management of the project. The projects were funded to conduct innovative programs in 13 different priority areas. In all cases where the priority area was the same, the strategies and/or level chosen for implementation differed. They were designed to be carried out in elementary, junior and senior high schools, an entire LEA and in two regional centers which provided services for 10 or more LEAs. Persons with major

responsibilities for the implementation of the projects included state agency personnel in the regional centers, local assistant superintendents, supervisors, principals and teachers. Each project was, therefore, unique in both approach and method of implementation. Table I presents a summary of the projects selected.

The first major activity for local project personnel was the expansion of the mini-proposal into a more uniform and comprehensive proposal, or project plan. They, with the assistance of the State SEED staff and selected State education agency consultants with expertise in the chosen area of experimentation, developed an expanded proposal which included (1) a statistical section: (2) a description of local needs and the problem area selected for the project; (3) the general and specific objectives of the project with accompanying strategies, and (4) the proposed budget.

This method of writing project proposals had significance for the evaluation design selected because: (1) all proposals were written in the same format allowing for synthesis of across project information; (2) it provided the project personnel, who had varied levels of experience in projects of this kind, with a workable plan for the implementation and thus the evaluation of their project; and (3) it gave the State SEED staff, evaluation consultants, and local project personnel a similar framework on which to base their particular activities.

The projects became operational in January, 1972, after each of the proposals had been approved.

TABLE 1: PROJECTS APPROVED

Priority Area	Project Title	Funding Level	Educational Level
Performance Accountability	"A Dialect Approach to Accountable Performance in Communicative Arts"	$30,000	Elementary
Performance Accountability	"Performance Accountability at Brevard Senior High School"	30,000	High School
Performance Accountability	"Performance Accountability in Reading"	20,000	Elementary
Performance Accountability	"Accountability Through Individualized Instruction"	30,000	Elementary
Community School	"A Community School Program"	30,000	Elementary
Reading	"Young Authors' Project"	25,000	Junior High
Value Development	"Value Development"	25,000	Junior High
Economic Education	"Economic Education in an Experimental Setting"	25,000	High School
Management Leadership	"Planning Laboratory Approach to School Management Activities"	32,000	Administrati
Management Leadership	"Improved Educational Experiences for Students Through Management and Leadership Development"	30,000	Administrati
Management Leadership	"Management and Leadership Development for Western North Carolina School Districts"	20,000	Administrati
School Community Relations	"Staff Development for an Open Space School"	25,000	High School
Environmental Education	"Environmental Study Area"	30,000	Elementary
Year-Round School	"Special Interest Extended School Year"	30,000	High School
Year-Round School	"Open Campus Year-Round School"	20,000	High School
Differentiated Staffing	"Staff Differentiation and Task Analysis of Ruffin School: A Pilot Study"	25,000	High School
Other			
Emotional Stability of Pupils	"Live and Learn Center"	30,000	Elementary
Math Lab Resource Center	"Mathematics Attainment Techniques Hub"	30,000	High School
Organizational Strategies for a Relevant Curriculum	"Organizational Strategies for a Relevant Curriculum"	30,000	High School
	Total	$517,000	
	Average Grant	27,211	

Approximate number of students = 28,150

Approximate number of professional staff = 560

THE EVALUATION

The SEED staff was interested in information regarding the effectiveness of this new program. To secure this information, the State Agency's Division of Development, of which the SEED program is a component, contracted to an independent division of the State Agency, the Division of Research, for an evaluation. Five percent of the program budget, or $30,000, was provided to finance the two year evaluation. An evaluation consultant was hired in October, 1971, to: (1) develop the evaluation plan; (2) provide evaluation assistance to individual projects: and (3) provide evaluation information to appropriate decision makers.

OBJECTIVES OF THE DESIGN

A review of the SEED program and its information needs revealed the following evaluation requirements:

- two separate evaluations were needed: one for the State agency of the entire SEED program and individual evaluations for each of the nineteen local projects
- information was needed by both groups not only at the end of the program but during the implementation of the program to identify possible weaknesses which could be modified to enhance program success.

An evaluation design was thereby needed which would provide two types of evaluation, evaluation of progress and outcomes, for two audiences, the State agency and the individual LEAs. These considerations led to the selection of a model utilizing the concepts of formative and summative evaluation.

Scriven[1], in his now almost classic article, describes formative evaluation as a process of discovering deficiencies and successes in the intermediate version of a new curriculum. Summative evaluation, as he defines it, is

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[1]Michael S. Scriven, "The Methodology of Evaluation" in Perspectives of Curriculum Evaluation (AERA Monograph Series on Curriculum Evaluation, No. 1). Chicago: Rand McNally and Company, 1967.

concerned with evaluating the effects of a whole teacher-curriculum package. Transferring these concepts from curriculum to project evaluation led to the development of the following definitions.

> *Formative evaluation is the process of providing information at intervals in the project's progress so that additions, deletions, or modifications can be made to maximize project success.*
>
> *Summative evaluation refers to a process of providing information concerning project outcomes so that decisions can be made regarding the continuation, rejection or modification of a project.*

The formative/summative evaluation concept, however appealing, was not easy to implement. The concept was relatively new and a review of the literature revealed theoretical positions rather than implementation techniques. Therefore, not only the design but techniques for design implementation had to be developed. Secondly, few, if any, of the persons associated with the SEED program were aware of the concept of formative and summative evaluation and even fewer were fully cognizant of its implications for project operation. It was necessary to sell the concept in order to establish an awareness of and commitment to the design. Finally, the placement of persons with the evaluation expertise needed to carry out a formative/summative evaluation in each of the project sites was not possible due to the limited funds available. The level of evaluation expertise in the Division of Research was sufficient to develop strategies for the implementation of a formative/summative evaluation model. There remained the problems of awareness of, commitment to, and implementation of the concept. The only practical and desirable solution was the direct involvement of local project personnel in the evaluation process.

Effective local involvement in the evaluation of multiple project programs depends on the ability of project personnel to carry out the required activities. Since there was great divergence in the evaluation awareness and competence of local project SEED personnel, an additional component of evaluation training

was added to the evaluation design. Inclusion of this training would provide personnel with the skills necessary to conduct the major portion of a formative/summative evaluation of their project and would, hopefully, demonstrate the significance of evaluation utilization in their educational decision making.

In summary, the evaluation plan for Project SEED was designed to meet the following objectives:

Local

1. To provide information to project directors on a regularly scheduled basis concerning progress of their individual SEED projects. (Formative)

2. To provide information to the local education policy makers upon which to base decisions regarding continuation, rejection, or modification of their individual SEED projects. (Summative)

State

1. To provide information after one year's operation to the SDPI concerning the progress of the total SEED project. (Formative)

2. To provide information to the SDPI upon which to base decisions regarding continuation, rejection, or modification of the total SEED program. (Summative)

Training

1. To provide local project personnel with expertise to carry out most of the major evaluation activities required by their SEED project.

The following sections outline in further detail the plan as it was designed and implemented.

THE DESIGN

The Local Project Evaluation Design

Formative - Two major objectives were conceived as being important in the development of a formative evaluation design for the individual projects:

(1) To detect weaknesses in the project plan prior to implementation so that added attention could be devoted to those areas.

(2) To obtain information during the project's operation concerning the success of project implementation so that necessary modification could be made.

To detect weaknesses prior to project implementation required a thorough review of the project as it had been planned. Project personnel, with assistance of a State Agency evaluation consultant completed a form designated the "Formative Evaluation Plan" which contained a listing of the specific objectives of the project, their accompanying strategies and tasks deemed critical to the accomplishment of the strategies. In columns beside each of the preceding were listed the persons responsible for the activity, the duration of the activity, and an identification of those activities to be evaluated. The process of completing this form gave the project director and consultant an opportunity to review in detail with one or more members of the project staff the planned implementation of the project. Problem areas which were discovered during this review were either corrected or noted for additional attention during implementation. The completed form provided the project personnel with a concise statement of the entire project from beginning to end which could be used for project implementation, management, and evaluation.

The following factors were identified as important in obtaining information relative to the success of project implementation:

1. Is the project operating on schedule?
2. Are the available resources (personnel, facilities, finances, etc.) adequate for project operation?
3. What activities are creating problems in the operation of the project?
4. What activities can be easily assimilated into similar and/or regular school programs?
5. Is the project progressing toward the achievement of its objectives?
6. What activities should be added, deleted, or modified to increase the effectiveness of the project?

Several alternatives were considered to provide this information. In the final analysis, the decision was made to select a technique which would provide the State and the local project personnel with information concerning each of the project activities so that needed modifications could be made during implementation and so that activities which had been successful could easily be identified at the conclusion of the project. Since the strategies listed under each objective were, in reality, the major activities which would be undertaken, the decision was made to evaluate each of the strategies in relation to the objectives for which they were written. A method was devised in which the project personnel, all of whom had major responsibilities other than SEED, could easily obtain this information.

A strategy evaluation checklist was designed to provide the information asked in the questions above. As each strategy was completed, it was analyzed using this checklist by local project personnel. Necessary changes which would enhance the effect of the project were then made on the basis of this review.

Summative - Rather than assess the accomplishment of global objectives or measure several isolated variables, it was determined that the summative evaluation for each of the projects consist of an analysis of the accomplishment of each of the project's specific objectives. This approach would allow the LEA to analyze the success of each of the project components, thereby providing specific information upon which to base decisions regarding adoption, rejection, or modification of part or all of the project plan. Furthermore, the results would provide information to the State Agency concerning the project's success and promising activities which could be carried out in other LEAs.

As with the formative evaluation, the project personnel, with the assistance of an evaluation consultant, completed an outline called the"Summative Evaluation Plan." This plan included a listing of the specific objective, information

concerning the sample from which the data would be collected, the instrument to be used in data collection, the type of analysis to be used on the data and the date by which the analysis was to be completed. By completing the plan, it was anticipated that project personnel would become more familiar with the techniques of project evaluation. The plan, itself, provided the project staff with a detailed outline of the activities to be accomplished to evaluate each of their objectives.

The development of the formative and summative evaluation plans provided project personnel with a "tailor-made" guide for both the operation and evaluation of their project. The decisions determining the data to be collected were made by local personnel, resulting in evaluation information that was directly related to local needs. This relationship was built into the design in the requirement that each evaluation activity be directly associated with a project goal or activity. The plan for the collection of formative evaluation results provided local personnel with a relatively quick and easy method of analyzing each of the projects' activities as they occurred. More importantly, the plan permitted change in the project proposal based on information concerning the degree to which activities succeeded in contributing to the achievement of project objectives. As a result, the total operation of the projects became more fluid and less regimented as activities which clearly did not contribute to project success could be discarded and activities which were successful would be amplified.

The State Level Evaluation Plan

No formal formative and summative plans were adopted at the State level as had been done in the individual projects since the State plan was not written as a proposal with accompanying objectives and strategies. However, both types of evaluation were employed in the design for the total program.

Formative

Formative evaluation activities centered on regular and irregular forms of input from various sources. These inputs, which included regular meetings between the SEED staff and evaluation consultant, provided information upon which the SEED program staff could base decisions regarding the policies which guided the implementation of the program. The interim evaluation report, prepared after the first year of program operation, presented a summary of the formative evaluation results. The report contained an overview of the progress of each of the 19 individual projects, a summary of the State SEED activities to date, and recommendations for the second year's operation. Information reported was compiled from evaluation reports submitted to the evaluation consultant by the local project personnel, available records on file of SEED activities, interviews with the SEED staff and information gleaned from other available resources.

Summative

The purpose of a summative evaluation of the total program is to provide information for the State level decision makers concerning the success of the implementation of the program. In addition, those groups which are concerned with developmental activities, which in this case includes both the LEAs and the State Education Agency, require documentation for continuation of a program and for potential adopters. To accomplish this, the summative evaluation design for the total SEED program contains the following components:

- a review of the SEED program as it was designed and implemented
- an evaluation of each of the 19 local projects
- synthesis of relevant across-project data
- results of a survey designed to determine the impact of SEED in the local unit and the success of its implementation
- documentation for decision makers at various levels to utilize in planning for continuation or adoption of the successful components of the program.

This information will be presented in three documents: a State level evaluation report, evaluation reports for each of the 19 projects and an "Adopter's File" for each of the projects. These reports will provide information upon which to base both State and local decisions related to the program and assist in the development of an awareness of SEED and the individual projects to potential utilizers of the findings across the State.

TRAINING

As mentioned in a previous section, evaluation training for local project personnel was a vital part of the evaluation design. The four training sessions, conducted during the two year period of SEED operation, were designed to focus on the needs of local project personnel as determined by the types of evaluation activities outlined in the collective summative evaluation plans of all of the projects. A review of the summative plans, along with consideration of the training needs required to implement the total evaluation plan, led to the selection of the following topics for each of the four sessions:

I. Formative and Summative Evaluation
   Development of Local Formative and Summative Evaluation Plans

II. The Importance of Evaluation at the Local Level
   Selecting a Random Sample
   Organization of Record Keeping Activities
   Questionnaire Design

III. Testing
   Evaluation Design

IV. Data Presentation
   Writing of Local Evaluation Reports

Papers relating to these topics were contained with additional evaluation information in a Handbook of Evaluation Techniques[2] which was given to each of the participants.

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[2]Tanya M. Kniefel, Handbook of Evaluation Techniques, Raleigh, North Carolina: Division of Research, North Carolina State Department of Public Instruction, April, 1972.

Since all project directors and most of the other personnel working in the project had other major responsibilities and obligations, efficiency in the time spent for training was another important consideration. For those sessions (the first and last) that dealt with the development of a product (the evaluation plans and evaluation report) individual assistance was provided to each project by a Division of Research evaluation consultant in Raleigh in order to minimize the time required to develop the product at the local level. The remaining sessions were held in areas more centrally located to the projects in the western and eastern parts of the State in order to minimize travel time and maximize attendance, length of time available for training, and opportunity for open discussion.

Although evaluation training was specifically designed to provide local project personnel with the skills necessary for successful involvement in the evaluation of their projects, the sessions provided an opportunity for additional desirable activities. Project personnel were able to get together with others in the program and exchange successes and problems. Quite often people found that their problems were not unique and that they could work together toward solutions. The sessions also provided an important opportunity for the establishment of rapport between the local project personnel and the Project SEED evaluator. This rapport was critical to the achievement of the cooperation needed between the State and local education agencies to adequately conduct the evaluations of the local projects. Finally, the sessions provided a forum for the presentation and discussion of new ideas and practices relating to both the projects and their evaluation.

CONCLUSIONS AND IMPLICATIONS

Several writers such as Stufflebeam et al[3] have proposed specific criteria to which evaluations must conform to be considered "acceptable." Basically, these criteria seem to indicate that the following two questions be satisfactorily answered in order to adequately justify utilization of the design.

- To what extent does the design provide valid, relevant information to the decision maker?
- To what extent is the implementation of the design feasible in terms of cost, materials and equipment required, personnel, etc?

It is the purpose of the remainder of this paper to relate the design presented to the criteria represented in these questions. The reader may then judge for himself if the answers provided are satisfactory.

Every attempt was made to gather valid and reliable data for each of the evaluations. The selection of data to be collected for the individual projects was made collectively by local project personnel to ensure the collection of data related to local needs, subject area specialists to ensure the selection of current, appropriate assessment techniques, and an evaluation consultant to ensure the appropriateness of the data collection techniques. Individual assistance provided by a trained evaluator and evaluation training sessions were the vehicles utilized to induce validity and objectivity into the implementation of the evaluation activities.

Funding restrictions prohibited the utilization of strategies designed to control the effect of possible biases and loss of objectivity introduced when persons responsible for evaluation were also responsible for project implementation and success. An audit of the evaluation by an independent third party, impossible due to limited funding, was greatly desired and sorely missed. Additional attention was, therefore, given to each evaluation activity in order to limit the effect of these biases.

[3]Daniel L. Stufflebeam, et al. Educational Evaluation and Decision Making, Itasca, Ill., F. E. Peacock Publishers, Inc., 1971.

A final area of concern in the design was the dependence of the formative and summative evaluation on the quality of the written proposal. Efforts to control this possible limitation were made by the inclusion of proposal writing as a major program activity. Input in the development of the proposal from local project personnel, SEED staff consultants with expertise in the development of innovative projects, and subject area specialists was designed to increase validity of both the objectives of the project and the activities chosen to achieve the objectives.

Relevance of the evaluation to the client served was a key consideration in the development of the design and the procedures for reporting the results. Continual communication, both informally and as activities built into the design, permitted the collection of information directly related to both State and local needs. This component appeared to be crucial to the establishment of commitment to the design and cooperation in its implementation. A concerted effort was also made to provide reporting procedures which could be utilized by a wide variety of audiences. Assistance provided by State SEED and local project personnel in both the planning and development of the final reports is designed to ensure the production of documents suited to the various levels of decision making in the State.

The feasibility of implementing the design was certainly demonstrated by the fact that all of the planned activities were accomplished with minimal staff (one evaluation consultant with the assistance of local project personnel and four State SEED consultants) and limited funds ($30,000 for two years). Several factors seemed to have contributed significantly to the implementation of a design conducted under such monetary and personnel restrictions. First, everyone associated with the evaluation worked very hard, long hours beyond their regularly scheduled responsibilities.

A second factor may have been related to the low level of funding itself. Most of the projects were necessarily, because of budget, conducted in a single school setting. As a result, the samples from which the data were collected were not excessively large (the largest was N=700) reducing the time required for data collection and analysis. Finally, analysis of results was greatly facilitated by the availability of the services of statistical analysts and a computer in the State Agency.

Local involvement in the evaluation process was such a key component to the implementation and success of the design that special note should be taken of its contribution. As noted in the earlier description of the SEED program, there were few if any similarities between the persons responsible for the local SEED projects. In many cases, they had never actively participated in such a project. It was, therefore, no surprise that their first reaction to formative and summative evaluation and its implications for them as they conducted a project was one of hesitation and bewilderment. For many reasons, perhaps the excitement of implementing an innovative project, the independence in project operation permitted as a result of formative evaluation, or the assistance provided in the evaluation activities, local project personnel cooperated to the fullest in every activity introduced to them. Much to the surprise of those responsible for the evaluation, they became the design's staunchest supporters extolling its virtues at every possible opportunity. Surely, this attitude and the diligent manner in which they conducted evaluation activities contributed greatly to the success of the overall design.

In summary, those of us who have been associated with the development and implementation of this evaluation design feel that it has definite implications for future evaluation efforts. The significance of the successful implementation of the design lies in the fact that it clearly demonstrates the feasibility

of utilizing a model of formative and summative evaluation in multiple-project programs. It further supports the premise that, with training, local project personnel can and should be involved in the evaluation process. Finally, even though it is still in an experimental form, the design has provided us with a beginning, a place to start, as we attempt to encorporate relevant, meaningful evaluation results into the educational policy decision making process in North Carolina.